WHAT IS CLAIMED IS:

1. A method of manufacturing an external force detection sensor, which method includes through-hole dry etching of an element substrate using an etching stop layer, wherein said etching stop layer comprises an electrically conductive material.

2. A method of manufacturing an external force detection sensor, which comprises forming a recessed part on a back surface side of an element substrate, forming a membrane on a face side, providing an etching stop layer comprising an electrically conductive material on a top surface of the recessed part of said element substrate, joining the back surface side of said element substrate with a support substrate, and forming a sensor element by dry etching of the membrane of said element substrate.

3. A manufacturing method of an external force detection sensor according to claim 2, wherein the recessed part is formed in a center part of a back surface of the element substrate.

4. A method of manufacturing an external force detection sensor, comprising interposing an etching stop layer comprised of an electrically conductive material between an element substrate and a dummy support substrate to support the element substrate through-hole dry etching of the element substrate to form a sensor element.

5. A method of manufacturing an external force detection sensor according to claim 4, wherein the dummy support substrate and the etching stop layer are removed after the sensor element is formed and, after that, a support substrate with a recessed part formed therein is arranged on a back surface side of said element substrate such that the recessed part of said support substrate is arranged opposite to the sensor element and, then the support substrate is joined with the element substrate.

6. A method of manufacturing an external force detection sensor, comprising forming an etching stop layer comprised of an electrically conductive material in a preset sensor element forming area on a back surface side of an element substrate, arranging a support substrate with a recessed part formed therein on a back surface side of said element substrate, the recessed part of said support substrate being arranged opposite to the etching stop layer of said element substrate, joining the support substrate with the element substrate, and, thereafter, forming a sensor element by through-hole dry etching of the sensor element forming area of said element substrate from its face side.

7. A method of manufacturing an external force detection sensor, comprising forming an etching stop layer comprised of an electrically conductive material on a preset sensor element forming area on a back surface side of an element substrate, arranging a support

substrate with a recessed part formed therein on the back surface side of said element substrate, the recessed part of said support substrate being arranged opposite to the etching stop layer of said element substrate, joining the support substrate with the element substrate, then, reducing said element substrate in thickness to a specified value and, then, forming a sensor element by through-hole dry etching of the sensor element forming area of said element substrate from its face side.

8. A method of manufacturing an external force detection sensor, comprising forming a membrane by machining a preset sensor element forming area of an element substrate from both face and back surface sides, arranging an etching stop layer comprised of an electrically conductive material formed on a back surface side of the membrane, then, joining a support substrate with a back surface side of the element substrate, and then forming a sensor element by through-hole dry etching of the membrane from its face side.

9. A method of manufacturing an external force detection sensor according to claims 2, 3, 5, 6, 7 or 8, wherein the element substrate is formed of a silicon material, the support substrate is formed of a glass material, and the element substrate is anodically joined with the support substrate.

10. A method of manufacturing an external force detection sensor according to one of claims 1 to 8,

wherein the etching stop layer is formed of an electrically conductive material whose etch selectivity which is the ratio of the dry-etch rate of an element substrate to the dry-etch rate of an etching stop layer is not less than 1.

11. A method of manufacturing an external force detection sensor according to one of claims 1 to 8, wherein the sensor element is a movable element.

12. A method of manufacturing an external force detection sensor according to claim 10, wherein the etching stop layer is made of titanium or aluminum.